

Respiratory and Artificial Ventilation

1. **Which of the following oxygen cylinders would be the closest to last no longer than 50 minutes flowing at 10 liters per minute?**
 - a. E tank
 - b. D tank
 - c. M tank
 - d. G tank
2. **You are attempting to replace the oxygen cylinder in your truck. After removing the regulator from the old cylinder, removing the old cylinder, and placing the new cylinder in the oxygen compartment, you attempt to connect the regulator. The new cylinder has a yellow stripe around it instead of a green one but was stored with the green cylinders. You are unable to get the regulator to seat properly and it will not turn. You should:**
 - a. remove the cylinder and get a green cylinder.
 - b. replace the oxygen regulator with a new one.
 - c. attempt to force the regulator onto the cylinder
 - d. put the old cylinder back on the truck.
3. **Before applying a nonrebreather mask, the EMT should take what action?**
 - a. Insert the proper venturi to receive the correct oxygen concentration.
 - b. Inflate the reservoir bag and make sure the bag does not deflate during inspiration.
 - c. Make sure the oxygen supply has greater than 200 psi in the tank.
 - d. Connect the mask to a humidified oxygen source and observe for the heart rate to slow.
4. **Which of the following colors identifies an oxygen cylinder?**
 - a. Black
 - b. Orange
 - c. Blue
 - d. Green
5. **When does respiratory distress change to respiratory failure?**
 - a. When the respiratory challenge continues, the systems cannot keep up with the demand, and skin color and mental status change.
 - b. When the patient who is short of breath, with noisy respiration, presents in the tripod position but then suddenly has the condition clear up and return to normal.
 - c. When the compensatory mechanism is no longer needed and the patient goes into arrest.
 - d. When the respiratory challenge continues, the systems fail with the demand for oxygen, pupils dilate, and the skin becomes hot and dry.
6. **What signs and symptoms would indicate inadequate breathing in a patient?**
 - a. Increased effort to breathe, increased depth of respiration, pink dry skin, normal mental status
 - b. Decreased depth of respiration, decreased rate of breathing, hot clammy skin, normal mental status
 - c. Rapid breathing, pale skin, and a normal mental status
 - d. Increased effort to breathe, cyanosis, cool clammy skin, altered mental status
7. **You are ventilating an adult patient with a bag-valve mask when you notice that his abdomen is getting bigger. You should:**
 - a. decrease the flow of oxygen.
 - b. suction the airway.
 - c. apply pressure to the abdomen.
 - d. apply cricoid pressure.
8. **Which of the following statements BEST describes the exchange of gas in the alveoli?**
 - a. Blood moves by way of the pulmonary capillaries, air arrives at the alveoli, and osmosis occurs.
 - b. Air moves into the airway, blood arrives via the pulmonary veins, and osmosis occurs.
 - c. Blood moves from the left heart to the lungs, air arrives in the alveoli sacks, and diffusion occurs.
 - d. Air moves into the alveoli, blood is transported by the pulmonary capillaries, and diffusion occurs.

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9. **Your 68-year-old patient is suffering from chronic obstructive pulmonary disease; this condition can cause gas exchange interruption by what process?**
- The bronchioles are constricted by the abundance of thick secretions that reduce the airflow into the alveoli.
 - It is caused by a long-term disease process that blocks the blood flow to the alveoli due to arteriolosclerosis interrupting gas exchange.
 - The process of inspiration and expiration has grown sluggish due to the advanced age of the patient and the deterioration of the lung tissue.
 - It limits the alveoli's capability to exchange oxygen and carbon dioxide because the alveoli itself is not working.
10. **For life to be maintained, a balance of oxygen and carbon dioxide is needed. The condition when oxygen levels are low is called:**
- hypoxia.
 - hypotension.
 - hypercarbia.
 - hyperventilation.
11. **Your patient is a 4-year-old male who was struck by a vehicle and is now unresponsive with an obvious head injury. As you are ventilating him with a bag-valve-mask device, you detect increasing resistance to ventilation. Which of the following should you do?**
- Check your rate of ventilation.
 - Perform a head-tilt, chin-lift maneuver to ensure that the airway is open.
 - Switch to a flow-restricted oxygen-powered ventilation device.
 - Stop ventilations for 1 to 2 minutes to allow trapped air to escape from the lungs.
12. **A nonrebreather mask at 12–15 liters per minute can deliver to the patient what percent of oxygen?**
- 16–21
 - 24–44
 - 80–90
 - 90–100
13. **Your patient is a 55-year-old man with a history of chronic bronchitis. You have been called to his home today because of an increase in his level of respiratory distress. The patient is on 2 liters per minute of oxygen by nasal cannula at home. Your assessment reveals difficulty speaking due to shortness of breath, leaning forward to breathe, a productive cough, and a respiratory rate of 32 per minute. Which of the following is true concerning the best course of action for this patient?**
- You should increase the patient's oxygen flow rate to deliver adequate amounts of oxygen to his tissues. If his respiratory rate decreases, you can assist him with a bag-valve-mask device.
 - You should not increase the patient's oxygen flow rate because of his likely dependence on a hypoxic drive to stimulate breathing.
 - You should increase the patient's oxygen flow rate until his respiratory rate decreases and then resume oxygen administration at 2 liters per minute.
 - Because increased blood levels of carbon dioxide are the primary stimulus to breathe, you should encourage the patient to rebreathe his exhaled air from a paper bag.
14. **The safe residual for an oxygen cylinder is _____ psi.**
- 300
 - 1,000
 - 500
 - 200

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15. **Your patient is a 65-year-old male with a history of COPD. He is sitting up and complaining of a severe shortness of breath. You should:**
- suction the airway with a rigid suction catheter.
 - apply a nonrebreather mask giving 15 lpm of oxygen.
 - administer 4 lpm of oxygen via nasal cannula.
 - insert a nasal airway and ventilate.
16. **What is the extremely rare condition that can cause respiratory depression?**
- High concentration of oxygen can depress breathing when the patient has an allergic reaction from the oxygen.
 - The eyes can develop scar tissue on the retina from a high concentration of oxygen.
 - COPD has changed the stimulus to breathe to the hypoxic drive and high concentration can depress breathing.
 - Lungs can react unfavorably to oxygen when the concentration is too high for a long period of time and this can depress breathing.
17. **Of the three types of oxygen flowmeters, which one can only be used upright?**
- Pressure-compensated flowmeter
 - Constant flow selector valve
 - Hudson gauge flowmeter
 - Bourdon gauge flowmeter
18. **In assessing a patient's breathing, what is your first question?**
- Are they sick or not sick?
 - Are they breathing?
 - Are they alive or dead?
 - Is their breathing adequate or inadequate?
19. **You have arrived at the scene of a call for a "man down." As you enter the residence you note that your patient is a male in his mid-60s who is awake but does not seem to acknowledge your presence. He is perspiring profusely, has cyanosis of his ears and lips, and has rapid, shallow respirations. Which of the following should you do first?**
- Assist ventilations with a bag-valve mask and supplemental oxygen.
 - Listen to his lung sounds.
 - Obtain the patient's medical history.
 - Check for a radial pulse.
20. **Which of the following is necessary to deliver oxygen to patients at a safe pressure?**
- Filter
 - Float ball
 - Regulator
 - Flowmeter
21. **Which of the following patients does NOT require the administration of supplemental oxygen?**
- A 6-year-old male with a history of asthma whose breath sounds are silent and who is drowsy
 - A 31-year-old male who is unresponsive due to an overdose of narcotics
 - A 24-year-old woman who is breathing 28 times per minute after being in an argument with her husband
 - A 60-year-old woman with a history of chronic obstructive pulmonary disease (COPD) who can speak two or three words at a time without a breath
22. **The process of air moving in and out of the chest is called:**
- respiration.
 - ventilation.
 - inhalation.
 - tidal volume.

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23. **What are the signs of hypoxia?**
- Warm dry skin, with difficulty in breathing, and hypertension
 - Disease process that robs the patient of adequate breathing and perfusion
 - Shock caused from the lack of blood flowing to the vital organs like the brain and heart that is irreversible
 - Commonly seen as blue or gray skin, deterioration of patient's mental status like confusion or restlessness
24. **Which of the following is the BEST description of inadequate breathing?**
- The respiratory rate is slower than normal.
 - The minute volume is greater than normal.
 - The respiratory rate is faster than normal.
 - The minute volume is less than normal.
25. **You are aggressively ventilating an adult patient with a bag-valve mask when you notice that his previously strong pulse is getting weaker. You should:**
- reduce the concentration of oxygen.
 - reduce the volume of the ventilations.
 - increase the concentration of oxygen.
 - begin chest compressions.
26. **Your patient is a motorcyclist who was ejected from his vehicle due to striking a guard rail. The patient is unresponsive to painful stimuli and is breathing six to eight times per minute. Which of the following should you do first?**
- Apply a nonrebreather mask with an oxygen flow rate of 15 lpm.
 - Use a bag-valve mask with supplemental oxygen.
 - Perform a rapid trauma assessment.
 - Apply a cervical collar.
27. **Which of the following is acceptable for maintaining a seal between an oxygen cylinder and regulator?**
- A pop-off valve
 - A flexible gasket
 - Medical grade adhesive tape
 - A light coating of lubricant
28. **The movement of oxygen and carbon dioxide between the alveoli and circulating blood is called:**
- cellular respiration.
 - external respiration.
 - internal respiration.
 - osmosis.
29. **The movement of oxygen and carbon dioxide across the cell membranes from the capillaries is called:**
- oxygenation.
 - external respiration.
 - internal respiration.
 - dehydration.
30. **You are transporting a 44-year-old female with chest pain and sudden respiratory distress. She is agitated, anxious, and refuses to have a nonrebreather mask applied. Which of the following is the best option?**
- Consult with medical control about restraining the patient.
 - Have her breathe into a paper bag to control her hyperventilation.
 - Use a nasal cannula instead.
 - Do not make further attempts to administer oxygen as it will only agitate the patient further.

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31. Which of the following describes why fast respiration may decrease minute volume?
- The rate does not decrease minute volume; it actually increases.
 - The rate causes turbulence in the trachea that increases the friction and decreases the amount of air movement.
 - It is due to the delay in the movement of the intercostal muscles and the pleural space.
 - The lungs may not have the time to fill and exchange gas.
32. Which of the following is the best device to deliver high-concentration oxygen to a breathing patient?
- Oropharyngeal airway
 - Simple face mask
 - Nonrebreather mask
 - Nasal cannula
33. A 16-year-old patient presents with labored breathing and audible wheezes, heart rate of 124, respiration 36; he is confused about whether he has taken his asthma medication. What is the treatment for this patient?
- Ventilate with a bag-valve mask with high oxygen or FROPVD.
 - Use a pocket mask, which will provide adequate oxygen to improve the patient's condition.
 - Supplement the breaths with high-concentration oxygen through a nonrebreather mask.
 - Give mouth-to-mouth breathing with a nasal cannula, providing the patient with an increase of oxygen.
34. Concerning the use of humidified oxygen, which of the following is true?
- The water in the reservoir should be treated with chlorine tablets to prevent the growth of bacteria.
 - It should only be used when assisting ventilations with a bag-valve-mask device.
 - The water reservoir should be changed on a weekly basis.
 - It is not of great benefit during short transports but can make the patient more comfortable.
35. The normal stimulus to breathe is stimulated by the chemoreceptors that measure the change of what two gases?
- Low hydrogen and high carbon monoxide
 - High hydrogen and low carbon dioxide
 - High carbon monoxide and low oxygen
 - High carbon dioxide and low oxygen
36. The oxygen flow rate for a nasal cannula should not exceed _____ liters per minute.
- 6
 - 4
 - 2
 - 8
37. To calculate the minute volume, you need to multiply what two measurements?
- Tidal volume and respiratory rate
 - Tidal volume and dead space air
 - Alveolar ventilation and respiratory rate
 - Alveolar ventilation and respiratory rate
38. A 16-year-old patient presents with labored breathing and increased respiratory rate, increased heart rate, and leaning forward with his hands on his knees. His skin is pink and his pulse oximetry is 96. This patient is suffering from respiratory:
- distress.
 - failure.
 - arrest.
 - hypoxia.

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39. **A 28-year-old male has been stabbed in the chest with a hunting knife. As you perform your primary survey, you see that air is escaping from the wound. What is the reason for this?**
- Chest integrity has caused disruption of the mechanics of breathing over pressuring the plural space, taking the air flow through the wound.
 - With the addition of a second passage, the positive pressure in the chest balances with the atmospheric pressure to create a fail segment that allows for air to be sucked through the wound.
 - The disruption of chest integrity has caused bronchoconstriction to increase, which makes the only pathway for the air through the wound.
 - When the mechanics of breathing are disrupted, a negative pressure cannot be created to pull air through the normal air passages and air is sucked through the wound.
40. **Why is inhalation described as an active process?**
- It requires the diaphragm to relax and use energy to move, creating a positive pressure.
 - It requires chest muscles to relax and use energy to move, creating a positive pressure.
 - It requires chest muscles to contract and use energy to move, creating a negative pressure.
 - It uses oxygen to assist chest muscles to contract, creating a negative pressure.
41. **What is the percentage of oxygen provided by connecting a high flow of oxygen to the oxygen inlet found on a pocket mask?**
- 50 percent
 - 16 percent
 - 21 percent
 - 100 percent
42. **Why does a patient involved in an auto crash who has major internal abdominal injuries require oxygen to maintain internal respiration?**
- A lack of oxygen in the air decreases the oxygen diffused into the bloodstream, which creates an increase of carbon dioxide.
 - The swelling of the abdominal space causes the diaphragm to be restricted, which will reduce the thorax space.
 - A lack of circulating volume decreases the oxygen and carbon dioxide transport capability.
 - The red blood cells have a reduction of hemoglobin that reduces the amount of oxygen that can be transported.

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Test Name: Respiratory and Artificial Ventilation

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2. a. remove the cylinder and get a green cylinder.
3. b. Inflate the reservoir bag and make sure the bag does not deflate during inspiration.
4. d. Green
5. a. When the respiratory challenge continues, the systems cannot keep up with the demand, and skin color and mental status change.
6. d. Increased effort to breathe, cyanosis, cool clammy skin, altered mental status
7. d. apply cricoid pressure.
8. d. Air moves into the alveoli, blood is transported by the pulmonary capillaries, and diffusion occurs.
9. d. It limits the alveoli's capability to exchange oxygen and carbon dioxide because the alveoli itself is not working.
10. a. hypoxia.
11. a. Check your rate of ventilation.
12. c. 80– 90
13. a. You should increase the patient's oxygen flow rate to deliver adequate amounts of oxygen to his tissues. If his respiratory rate decreases, you can assist him with a bag-valve-mask device.
14. d. 200
15. b. apply a nonrebreather mask giving 15 lpm of oxygen.
16. c. COPD has changed the stimulus to breathe to the hypoxic drive and high concentration can depress breathing.
17. a. Pressure-compensated flowmeter
18. b. Are they breathing?
19. a. Assist ventilations with a bag-valve mask and supplemental oxygen.
20. c. Regulator
21. c. A 24-year-old woman who is breathing 28 times per minute after being in an argument with her husband
22. b. ventilation.
23. d. Commonly seen as blue or gray skin, deterioration of patient's mental status like confusion or restlessness
24. d. The minute volume is less than normal.
25. b. reduce the volume of the ventilations.
26. b. Use a bag-valve mask with supplemental oxygen.
27. b. A flexible gasket
28. b. external respiration.
29. c. internal respiration.
30. c. Use a nasal cannula instead.
31. d. The lungs may not have the time to fill and exchange gas.
32. c. Nonrebreather mask
33. a. Ventilate with a bag-valve mask with high oxygen or FROPVD.
34. d. It is not of great benefit during short transports but can make the patient more comfortable.
35. d. High carbon dioxide and low oxygen
36. a. 6
37. a. Tidal volume and respiratory rate
38. a. distress.
39. d. When the mechanics of breathing are disrupted, a negative pressure cannot be created to pull air through the normal air passages and air is sucked through the wound.
40. c. It requires chest muscles to contract and use energy to move, creating a negative pressure.
41. a. 50 percent
42. c. A lack of circulating volume decreases the oxygen and carbon dioxide transport capability.